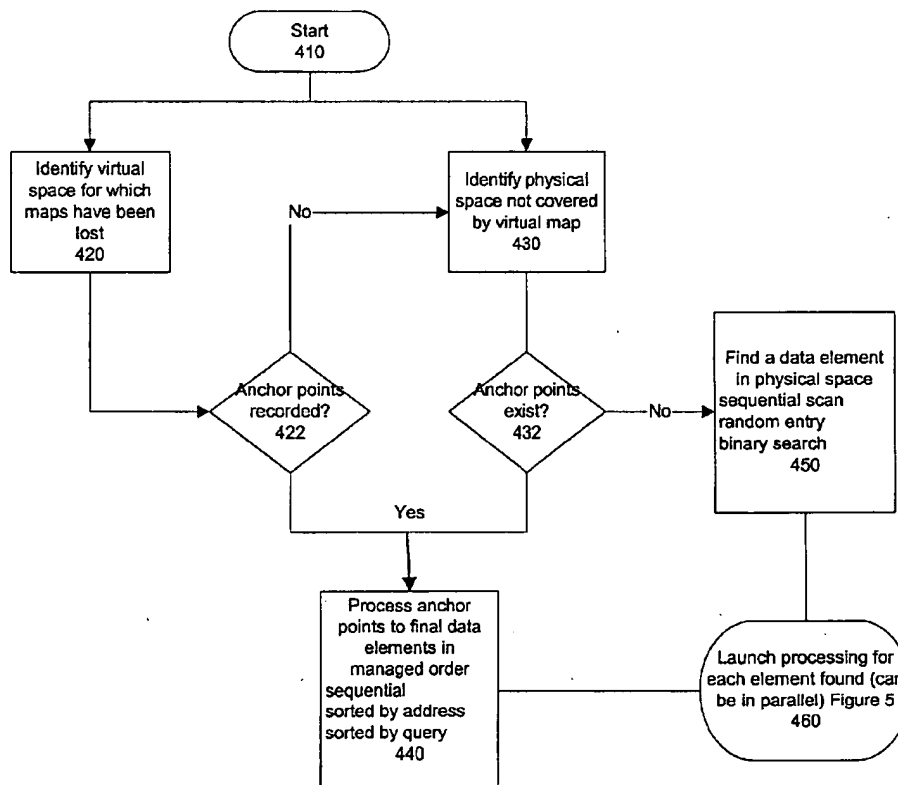




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Selkirk et al.(10) **Pub. No.: US 2002/0087673 A1**(43) **Pub. Date: Jul. 4, 2002**(54) **RECOVERY OF DYNAMIC MAPS AND DATA
MANAGED THEREBY****Publication Classification**(51) **Int. Cl.⁷ G06F 15/173**(52) **U.S. Cl. 709/223**(75) **Inventors:** Stephen S. Selkirk, Broomfield, CO
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Castle Rock, CO (US)**Correspondence Address:****Wayne P. Bailey****Storage Technology Corporation****One StorageTek Drive****Louisville, CO 80028-4309 (US)**(73) **Assignee: Storage Technology Corporation**(21) **Appl. No.: 09/752,253**(22) **Filed: Dec. 30, 2000**(57) **ABSTRACT**

A mechanism is provided for storing self-defining data and mapping elements with either a fixed set of allowed structures or types or with the structures and types determined by rules. Recovery is enhanced by the use of backward and forward pointers between data and mapping elements for the data elements in the order written by the management algorithm. Recovery is also enhanced by the use of companion pointers with metadata. The companion pointers may include pointers to data or mapping elements that are part of the same structural grouping. The metadata may describe the structural grouping. The metadata may also include pointers to the previous and/or next versions of the same elements. Recovery of the data and/or mapping structures is achieved by the reverse application of the management algorithm.



_____, Attorney Docket Number 00-116-DSK, and SELF-DEFINING DATA UNITS, serial no. _____, Attorney Docket Number 00-117-DSK, which are filed even date hereof, assigned to the same assignee, and incorporated herein by reference.

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Detail Description Paragraph - DETX (9):

[0024] With reference to FIG. 3, a block diagram of a data structure is illustrated in accordance with a preferred embodiment of the present invention.

Data structure 300 includes data elements D1 301, D2 302, D3 303, D4 304, D5

305, D6 306, and D7 307. Each data element includes metadata uniquely associated with the data such that installation management criteria, boundaries, and preferences for each data unit and attributes for the data units are maintained. This metadata may include time sequencing of metadata

(time stamp), location of stored data, structure definition pointers including

size parameters, pointers to related metadata units, management rules, sequencing rules, and management functions invoked to accomplish management rules.

Detail Description Paragraph - DETX (10):

[0025] The management rules may include performance criteria, reliability

criteria, availability criteria, and capacity criteria. The sequencing rules may include logical rules, time rules, and structure rules. Management functions may include RAID, parity, multiple parity, and other known functions

that may be invoked to accomplish management rules. Management rules, sequencing rules, and management functions may be stored in the metadata as pointers to the rules or functions.

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CROSS REFERENCE TO PROVISIONAL AND RELATED APPLICATIONS

[0001] This application claims the benefit of the filing date of corresponding

U.S. Provisional Patent Application No. _____, entitled "System for providing

a policy-based demand and use of functions like virtual volumes, instant copy,

RAID, etc.", filed Jun. 19, 2000. In addition, the present invention is related to applications entitled A SYSTEM TO SUPPORT DYNAMICALLY FLEXIBLE DATA

DEFINITIONS AND STORAGE REQUIREMENTS, serial no. _____, Attorney Docket Number

00-059-DSK; EFFECTING INSTANT COPIES IN A DYNAMICALLY MAPPED SYSTEM, serial no.

_____, Attorney Docket Number 00-060-DSK; USING CURRENT RECOVERY MECHANISMS TO

IMPLEMENT DYNAMIC MAPPING OPERATIONS, serial no. _____, Attorney Docket Number

00-061-DSK; DYNAMICALLY CHANGEABLE VIRTUAL MAPPING SCHEME, serial no. _____,

Attorney Docket Number 00-062-DSK; FLOATING VIRTUALIZATION LAYERS, serial no.